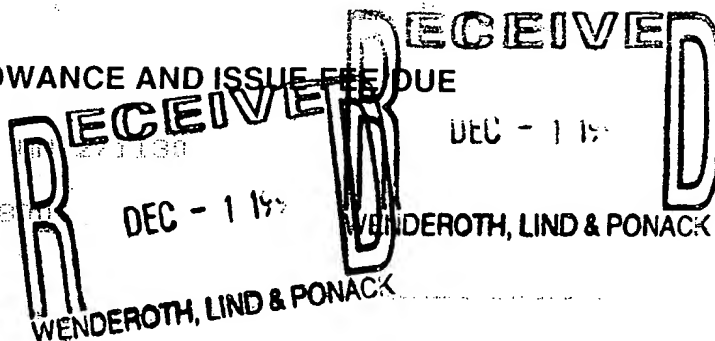




UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

000612
WENDEROTH, LIND & PONACK
2033 K STREET N.W. SUITE 800
WASHINGTON DC 20006



APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/925,676	09/09/97	012	MARSCHELT A	1658 11/30/97
First Named Applicant	SOUTHERN, 35 USC 154(b) term ext. = 0 Days.			

TITLE OF INVENTION ANALYSING POLYNUCLEOTIDE SEQUENCES (AS AMENDED)

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
1 203-764401V	43A-006.000	E88	UTILITY	NO	\$1210.00	02/28/00

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

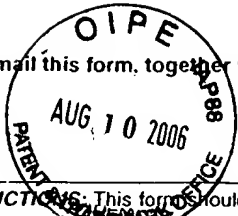
II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

YOUR COPY

Best Available Copy



PART B—ISSUE FEE TRANSMITTAL

Complete and mail this form, together with applicable fees, to:

Box ISSUE FEE
Assistant Commissioner for Patents
Washington, D.C. 20231

FILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Issue Fee receipt, the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) indicating a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

000513 HM12/1130
WENDEROTH, LIND & PONACK
2033 K STREET N. W. SUITE 800
WASHINGTON DC 20006

Note: The certificate of mailing below can only be used for domestic mailings of the Issue Fee Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing.

Certificate of Mailing

I hereby certify that this Issue Fee Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/925,676	09/09/97	012	MARSCHEL, A	1655 11/30/99
First Named Applicant	SOUTHERN, 35 USC 154(b) term ext. = 0 Days.			

TITLE OF INVENTION ANALYSING POLYNUCLEOTIDE SEQUENCES (AS AMENDED)

THE COMMISSIONER IS AUTHORIZED
TO CHARGE ANY DEFICIENCY IN THE
FEES FOR THIS PATENT TO DEPOSIT
ACCOUNT NO. 28-0215

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
1	263-7644DIV	435-006.000	ESS UTILITY	NO	\$1210.00	02/29/00

Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47) attached.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

WENDEROTH, LIND & PONACK, L.L.P.
1 _____
2 _____
3 _____

ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

A) NAME OF ASSIGNEE OXFORD GENE TECHNOLOGY LIMITED

B) RESIDENCE: (CITY & STATE OR COUNTRY) OXFORD, UNITED KINGDOM

Please check the appropriate assignee category indicated below (will not be printed on the patent)

☐ individual ☒ corporation or other private group entity ☐ government

4a. The following fees are enclosed (make check payable to Commissioner of Patents and Trademarks):

☒ Issue Fee [Check No. _____]
☐ Advance Order - # of Copies _____

4b. The following fees or deficiency in these fees should be charged to:

DEPOSIT ACCOUNT NUMBER _____
(ENCLOSE AN EXTRA COPY OF THIS FORM)☐ Issue Fee
☐ Advance Order - # of Copies _____

THE COMMISSIONER OF PATENTS AND TRADEMARKS IS requested to apply the Issue Fee to the application identified above.

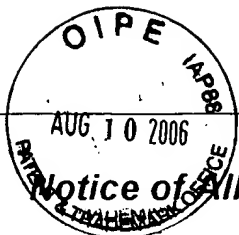
Authorized Signature *Walter M. Cheek, Jr.* (Date) 1-21-00
Walter M. Cheek, Jr. Reg. No. 33,367


NOTE: The Issue Fee will not be accepted from anyone other than the applicant; a registered attorney agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

Estimated Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending on the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND FEES AND THIS FORM TO: Box Issue Fee, Assistant Commissioner for Patents, Washington D.C. 20231

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE



Application No. 08/925,676		Applicant(s) Southern	
Examiner Ardin Marschel		Group Art Unit 1655	

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

- ☐ This communication is responsive to _____
- ☒ The allowed claim(s) is/are 36, 47-52, 54, 55, 71, 86, and 105; renumbered as 1, 3-11, 2, and 12; respectively
- ☐ The drawings filed on _____ are acceptable.
- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☒ received in Application No. (Series Code/Serial Number) 07/573,317
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

- ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
- ☐ Applicant MUST submit NEW FORMAL DRAWINGS
- ☐ because the originally filed drawings were declared by applicant to be informal.
- ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. _____
- ☐ including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.
- ☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

- ☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152
- ☒ Interview Summary, PTO-413
- ☒ Examiner's Amendment/Comment
- ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
- ☒ Examiner's Statement of Reasons for Allowance

The art unit designated for this application has changed. Applicant(s) are hereby informed that future correspondence should be directed to Art Unit 1655.

The suspension of prosecution of this application is hereby lifted due to the approval of the below given amendments which are deemed to remove the issue of potential interferences.

Authorization for this Examiner's Amendment was given in a telephone interview with Warren Cheek on 11/10/99.

The following amendments are effected without prejudice or disclaimer.

In the claims:

Cancel claims 72 and 95, without prejudice.

In claim 36, line 6, after "support"; insert "--through a computer-controlled printing device--".

In claim 47, line 1, delete "oligomers"; and insert therefor "--oligonucleotides--".

In claim 47, line 2, delete "monomers"; and insert therefor "--nucleotides--".

In claim 47, line 2, delete "n".

In claim 47, line 4, delete "n"; and insert therefor "--the--".

In claim 47, line 4, delete "monomers"; and insert therefor "--nucleotides--".

In claim 47, line 5, delete "n"; and insert therefor --a plurality of--.

In claim 47, line 6, delete "n"; and insert therefor --the--.

In claim 47, line 6, delete "monomers"; and insert therefor --nucleotides--.

In claim 47, line 7, after "separately to", delete "n"; and insert therefor --a plurality of--.

In claim 47, line 7, delete "within each of the n"; and insert therefor --amongst the plurality of--.

In claim 47, line 9, delete "a total of s times"; and insert therefor --until each of said regions contains oligonucleotides of length s--.

In claim 48, lines 1-2, delete "the monomers are nucleotides and n is 4"; and insert therefor --the number of different nucleotides utilized is 4--.

In claim 50, line 2, after "regions are"; insert --organized on the surface in--.

In claim 52, line 2, delete "from 10 to"; and insert therefor --at least--.

In claim 54, line 8, delete "cells"; and insert therefor --regions--.

In claim 54, line 9, delete "cells"; and insert therefor --regions--.

In claim 54, line 11, delete "cells"; and insert therefor

--regions--.

In claim 71, lines 1-2, delete "sequence variants"; and insert therefor --sequences--.

In claim 71, line 4, delete "variant".

In claim 71, line 4, after "surface of"; delete "a"; insert therefor --an impermeable--.

In claim 71, line 9, delete "variant".

In claim 86, line 2, after "oligonucleotides"; insert --,--.

The following is an Examiner's Statement of Reasons for Allowance:

The instant claims are directed to methods of making and using oligonucleotide hybridization arrays as well as one claim to a specific array type. The attached PTO Form 892 lists a number of U.S. Patents which may have supported potential interferences but which are deemed sufficiently distinct, and may be interpreted as improvement Patents, from the instantly amended claims so as to remove this issue of potential interferences. Stavrianopoulos et al. (U.S. Patent No. 4,994,373) is the closest prior art of record but neither teaches nor suggests monomer by monomer synthesis of oligonucleotides on a surface nor the hybridization assay practice of utilizing an array of different oligonucleotide probes on a single surface. Another close prior art of record is that of Drmanac et al. (U.S. Patent No. 5,202,231) which is directed to sequencing by hybridization to

arrays on filters but neither teaches nor suggests that the surface of such arrays be impermeable. Potter et al. and Graham et al. are listed on the enclosed PTO Form 892 due to being the closest prior art of record to instant claim 71 because of disclosing polynucleotide analysis via orthogonal oligonucleotide stripes but do not teach or suggest the impermeable surface practice as now required for the practice of instant claim 71. Lastly, it is noted that the phrase "predetermined sequences" as present in several of the instant claims, such as claim 36, line 5, for example, is interpreted to require that the complete sequence of each and every oligonucleotide probe on the array surface is known during the practice of the instant claim steps.

It is noted that all sequences that are disclosed in the instant application were disclosed in the priority document, PCT/GB89/00460, filed 5/2/89, which predates the sequence rule implementation date. Therefore, compliance with the sequence disclosure rules via computer readable form submission etc. is not required for the instant application.

Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably accompany the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The

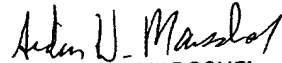
faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The CM1 Fax Center number is either (703) 308-4242 or (703)305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ardin Marschel, Ph.D., whose telephone number is (703) 308-3894. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached on (703) 308-1152.

Any inquiry of a general nature or relating to the status of this application should be directed to the Chemical Matrix receptionist whose telephone number is (703) 308-0196.

November 12, 1999


ARDIN H. MARSCHEL
PRIMARY EXAMINER



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKETT NO.
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EXAMINER

ART UNIT	PAPER NUMBER
----------	--------------

16

DATE MAILED:

EXAMINER INTERVIEW SUMMARY RECORD

All participants (applicant, applicant's representative, PTO personnel):

(1) WARREN CHEEK (app rep) (3) _____
(2) ARDN MARSCHEL (Ex) (4) _____

Date of interview 11-10-99

Type: ☒ Telephonic ☐ Personal (copy is given to ☐ applicant ☐ applicant's representative).

Exhibit shown or demonstration conducted: ☐ Yes ☐ No. If yes, brief description: _____

Agreement ☒ was reached with respect to some or all of the claims in question. ☐ was not reached.

Claims discussed: all pending

Identification of prior art discussed: See reasons for allowance & comments.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: Mr. Cheek relayed

approval of the attached Examiner's Amendment.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

☒ 1. It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph below has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW (e.g., items 1-7 on the reverse side of this form). If a response to the last Office action has already been filed, then applicant is given one month from this interview date to provide a statement of the substance of the interview.

☒ 2. Since the examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the substance of the interview unless box 1 above is also checked.

Arden Marschel
Examiner's Signature

Notice of References Cited

Application No.

08/925,676

Applicant(s)

Southern

Examiner

Ardin Marschel

Group Art Unit

1655

Page 1 of 1

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
*	A	5,677,195	10/14/97	Winkler et al.	436	518
*	B	5,807,522	9/15/98	Brown et al.	422	50
*	C	5,527,681	6/18/96	Holmes	435	6
*	D	5,445,934	8/29/95	Fodor et al.	435	6
*	E	5,744,305	4/28/98	Fodor et al.	435	6
*	F	4,994,373	2/19/91	Stavrianopoulos et al.	435	6
*	G	5,925,525	7/20/99	Fodor et al.	435	6
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
	N						
	O						
	P						
	Q						
	R						
	S						
	T						

NON-PATENT DOCUMENTS

*		DOCUMENT (Including Author, Title, Source, and Pertinent Pages)	DATE
	U	Potter et al., Gene, Volume 48, pp. 229-239.	1986
	V	Graham et al., Gene, Volume 48, pp. 241-249.	1986
	W		
	X		

* A copy of this reference is not being furnished with this Office action.
(See Manual of Patent Examining Procedure, Section 707.05(a).)